

Further Observations on Freezing Insects for Storage

By Dr. RONALD S. WILKINSON*

In a former paper (Wilkinson, 1974) I described my efforts during eight years to freeze smaller Lepidoptera in sealed containers in my home refrigerator for temporary preservation, so as to simplify final mounting when convenient. The method described was applicable to species which do not adapt ideally to the common practices of "papering" or pinning in the field for later preparation. Many of the smaller moths do not spread well when some time has elapsed between papering or pinning and relaxing. The freezing method, with later refinements, may be of interest to entomologists who collect more smaller moths during a collecting trip or night at the trap than can be set immediately and conveniently.

The procedure reported in 1974 was a simple one. Specimens which should receive identical locality labels were packed together after collection in wide-mouthed screw-top bottles or layered between loosely fitting discs of absorbent cotton (cotton wool) or similar material. Pertinent data were written on or affixed to the containers, and if some time would occur before freezing, chlorocresol crystals were introduced temporarily (and later re-used). Very small specimens were not layered, and I suggested that chlorocresol was hardly necessary if the insects would be frozen promptly and thawed for mounting within a reasonable time.

The containers were (and still are) stored in the freezing compartment of a refrigerator. Cardboard cartons can be wrapped in aluminium foil to maximise retention of moisture, as with frozen foods. I had kept Noctuidae frozen for many months and, upon opening the containers, the specimens thawed very quickly, were perfectly relaxed, and appeared as fresh as when killed. The practice is ideal for entomologists who have little time for mounting, as the carton, may be removed from the freezer individually and their contents thawed as occasion permits. As I suggested in 1974, even the collector who captures relatively few specimens will find the method useful if he does not wish to attend to mounting the next day, and students of certain other orders may want to adapt freezing to their own needs.

Since that time, it has become apparent that unless carefully managed, the use of chlorocresol to retard drying of specimens (described by Tindale, 1961; actually published in 1962), is optimally effective only on brief excursions. In my own experience and that of others who have used the chemical, the beneficial effects of chlorocresol are sometimes negated due to accident in the field or length of temporary storage with inadequate sealing. Those who would use chlorocresol, preliminary to freezing or not, would do well to ensure that their specimens are stored in very tightly sealed metal or plastic containers. (Of course, on long expeditions, the

* The American Museum of Natural History, New York, New York 10024

usual early morning ritual of spreading smaller specimens is undoubtedly the safest method, if carriage of mounted specimens on boards is available.)

My further experiments in freezing for much longer periods without chlorocresol have achieved good results, keeping in mind that retention of moisture is a vital factor in reducing somatic distortion. I formerly suggested the use of cardboard cartons for freezing, and although these have continued to prove adequate for short periods, loss of moisture through the porous cardboard has led me to the use of plastic containers for longer use (or always wrapping the cardboard containers in aluminium foil, or tying them securely in plastic bags of the market variety). Using these methods I have frozen Noctuidae without chlorocresol in my refrigerator as long as a year before thawing and setting, and the results have been satisfactory, although of course no preservation method can hope to approach the setting of a freshly collected moth. The present method offers an alternative to the busy collector, if the suggestions are closely followed. Very careful sealing and wrapping also reduce the possibility of the formation of ice crystals inside the container.

In my 1974 paper I suggested that students of orders other than the Lepidoptera might wish to experiment with freezing their specimens in home refrigerators. Since that time, although not a student of those orders, I have frozen insects in plastic containers from the Odonata, Hemiptera, Coleoptera, some Hymenoptera, Orthoptera and Diptera for periods of many months with satisfactory results, although Ephemeroptera and some Odonata (such as damselflies) did not survive well. These latter results are hardly conclusive, and various investigators will wish to attempt trials of their own.

References

- Tindale, N. 1961. The chlorocresol method for field collecting. *J. Lepid Soc.* 15: 195-197.
Wilkinson, R. 1974. Freezing Lepidoptera for temporary storage. *Great Lakes Entomol.* 7: 8.

OBSERVATIONS ON THE CYPRUS PUG: *EUPITHECIA PHOENICEATA* RAMBUR AT ALDWICK BAY, WEST SUSSEX. — This species is plentiful in this area and appears to be increasing. It has a long emergence period from early June to late October, but appears in greater numbers from late July to late August. In 1976, it was first seen on 28th May, but in 1977 not until 24th June in which year it was last observed on 16th October. In 1979 first seen on 12th June and last on 19th October; and in 1980 the first appeared on 6th June and the last on 14th October. The records show that the greatest number seen on any one night was 11 on 3rd August 1979. These records are based on moths noted at a 125 watt m.v. lamp or specimens found on lamp posts. — R. R. PICKERING, 123 Manor Way, Aldwick Bay, Bognor Regis, West Sussex PO21 4HN.